# Interface Test Procedures

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# HLA Testing: Where are we?

- HLA compliance is being defined by AMG
- Conformance (to some degree) to the HLA interface specification will constitute one component of HLA compliance
- TWG is addressing technical test procedures for Interface specification

# Interface Testing

MAJOR STEPS:

- 1) Define Interface specification
  - Interface working group
- 2) Decompose Interface services into essential components and their relationship
  - Interface state diagrams complete for Federation, Declaration, and Object Management
  - Need feedback on approach

# Interface Testing (cont'd)

3) Develop Test Procedures

- Ga Tech will develop draft procedures, first draft due February 9
- Procedures will be provided to TWG for review
- Procedures will then be provided to PF for implementation
- Results of PF (lessons learned) will result in procedures for HLA baseline

# State Diagrams

- Individual Services
  - v0.3 Interface Specification (15 January)
- Functional Services
  - collections of individual services
  - specific function (e.g., Pause)
- Execution
  - collections of functional services
  - specific action for execution (e.g., Send/Receive Interactions)

# Individual Services

- Fixed set of state information “supplied to”, “returned from”, or “checked for exceptions”
- State vectors created to track state (vs textual descriptio
- Examples:
  - Federate (name, id, fed name, connection parameters, sta
  - Save (saving/restoring, label, time, paused/rolling)
  - Object (class name, id, exist/not, attribute name, attribute value)
  - Capability (publish, i/e flag, subscribe, i/e flag, predicate

# Example State Diagram

| | SERVICE ISSUED | RTI STATE | FEDERATE STATE | | |
|---|---|---|---|---|---|
| Pre-Conditions | | Knows federation membership and FOM initialization content | Member of Federation | | |
| Operating State | | Wait for services to be issued | Knows current state | | |
| Event | Federate issues Publish Interaction Class | Check FOMi for valid Interaction(class); check Registrations for valid Time(transport); on error go to operating state | Submit Interaction(class), Capability(pub, i/e flag), and Time(transport) to the RTI | | |
| Post Conditions | | Register Capability(pub, i/e flag) for Interaction(class) | | | |

# Functional Services

## Two Types: Request/Respond and Posting

Request/Respond Services:

- Create/Destroy, Join/Resign, Pause/Resume, Save (rolling)/Restore, Save (paused), Query
- Update/Reflect Attribute, Send/Receive Interaction, Request/Provide Attribute Value
- Object Termination (delete/remove object, cancel/ remove object reflection)

# Functional Services (cont'd)

Posting Services:

- Publication (publish objects, attributes, and interactions)
- Subscription (subscribe objects, attributes, and interactions)
- Control (updates and interactions)
- Object Instantiation (id request, instantiate object, instantiate discovered object)

# Execution Services

## Framework for execution of services*

itialization

- *Subscription, Publication, Instantiatiation*

ontrol

- *Updates, Interactions*

ction

- *Update/Reflect Attribute*
- *Send/Receive Interaction*
- *Request/Provide Attribute*

bject Termination

- *Delete/Remove Object, Cancel Reflection/Remove Object*

# Execution Services (cont'd)

## Example: Update Attribute Values

itialization

- Fed A: Publish object class
- Fed A: ID request
- Fed A: Instantiate object
- Fed B: Subscribe object class
- RTI: Instantiate discovered object

ontrol

- RTI: Control update

ction

- Fed A: Update attribute value
- RTI: Reflect attribute value

# Interface Testing

- Interface tests will cover Functional Services
- Interface tests will be conducted in the order described by the Execution Framework
  - E.g., must have objects/interactions Initialized in order to test Control; must have passed Initialization and Control to test Actions, etc.
- Test procedures will be derived from state diagrams; tests will verify inputs, outputs, exceptions, and transitions

# Interface Testing: Where Are We?

- Interface Services
- State Diagrams
  - Test Procedures
  - Data Collection Requirements
  - Collection and Analysis Tools

# Next Steps

Ongoing review of state diagrams (I/F and Test WGs)

- Technical approach
- Accuracy
- Execution framework

Coordination with protofeds (Test WG and Protofed leads)

- Coordinate on testing plans, schedules, and support requirements